REMARKS/ARGUMENTS

Status of the Application

In the August 2, 2007, Final Office Action, claims 21-24 and 27 were rejected. In the present response, no amendments to the claims were made.

Rejections Under 35 U.S.C. § 102

Claims 21-23 and 27 were rejected under 35 U.S.C. § 102(b) as being anticipated by Matyshevska *et al.*, Mater. Sci. Eng. C 15:249-52 (2001). Claims 21-24 and 27 were rejected under 35 U.S.C. § 102(a) as being anticipated by Buzaneva *et al.*, Mater. Sci. Eng. C 19:41-45 (2002). Applicants address these rejections simultaneously.

Applicant believes that there is a difference in understanding between what dispersion means in the present application and what the Examiner believes it means. To Applicants, dispersion means de-bundling of carbon nanotubes ("CNTs") and uniform dissolution of CNT in liquid medium (see page 12, lines 15-35; see also the working examples on page 17, line 6 – page 20, line 29). This is consistent with the common meaning of dispersion in materials science. *See, e.g.,* Wikipedia at http://en.wikipedia.org/wiki/Dispersion (defining a dispersion, for material sciences purposes, as "a stable or unstable system of fine particles, evenly distributed in a medium"). Applicants further define the degree of de-bundling at the individual CNT level: Applicants' claimed CNT-nucleic acid molecule complex consists of an individual CNT wrapped with one or more single stranded nucleic acid molecules. Such wrapping, which can be observed by atomic force microscopy, prevents the carbon nanotubes from reaggregating following separation of the nanotube bundles by sonication.

What Matyshevska *et al.* and Buzaneva *et al.* describe is not a CNT dispersion at all. On page 249 of Matyshevska *et al.*, their procedure was described in the following way: "Single-walled carbon nanotube bundles were mixed with DNA/NaOH buffer solution." (emphasis added). This type of mixing without intense mechanical agitation in the form of, for example, ultrasonication will not disperse the bundled CNTs (see, e.g., O'Connell *et al.*, Science 297:593-96 (2002) (attached herewith and cited in a Supplemental IDS)). The CNT/DNA mixture made in Buzaneva *et al.* followed the same procedure as Matyshevska *et al.* (see page 42,

experimental section, of Buzaneva *et al.*), which should not produce dispersed CNTs.

Figure 3 of Buzaneva *et al.* (page 43) confirms that this procedure does not produce dispersed CNTs. This figure shows optical absorption spectra for films made from single-walled carbon nanotubes ("SWNT") along with and from the DNA/SWNT mixture. In both spectra, there is a lack of resolved peaks that are typically seen for films from well-dispersed SWNTs. As an example of what resolved peaks for well-dispersed films should look like, Applicants direct the Examiner to Figure 2C of Fukushima *et al.*, Science 300:2072-74 (2003) (attached herewith and cited in a Supplemental IDS). Aqueous dispersions made by Applicants' CNT-nucleic acid molecule dispersion show similar resolved features to that of Fukushima *et al.* (see Figure 3A of Applicants' specification). The best criteria for individually dispersed SWNTs are the existence of sharp peaks in the solution phase absorption and fluorescence spectra (see, e.g., O'Connell *et al.*, *supra*). These are electronic transitions of SWNTs. No such evidence of individually dispersed CNTs is present in either Matyshevska *et al.* or Buzaneva *et al.*, demonstrating the novelty of Applicants' claimed inventions over either of these references.

In light of the above arguments, withdrawal of the section 102 rejections is respectfully requested.

Rejections Under 35 U.S.C. § 103

Claim 24 was rejected under 35 U.S.C. § 103(a) as being obvious over Matyshevska *et al.* in view of Massey *et al.* (U.S. Patent No. 5,866,434). Applicants believe that the arguments presented above are equally applicable here and will thus not be repeated. Additionally, Applicants note that Massey *et al.* describes interaction of DNA with CNT or fibril as a *solid substrate*. Massey *et al.* thus has nothing to do with dispersion in liquid medium.

Withdrawal of the section 103 rejection is thus respectfully requested.

Summary

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. In order to expedite disposition of this case, the Examiner is invited to contact Applicants' representative at the telephone number

below to resolve any remaining issues. Should there be a fee due which is not accounted for, please charge such fee to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully submitted,

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Dated: August 28, 2007